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| 09/854,333 | 05/11/2001 | Brian S. Medower | | 7661 |

7590 06/28/2005

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| EXAMINER |
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ANGEBRANDT, MARTIN J

| ART UNIT | PAPER NUMBER |
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1756

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/854,333

Applicant(s)

MEDOWER ET AL.

Examiner

Martin J. Angebrannndt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/17/03&8/9,6/1 & ,3/18/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>9/17/03&8/9/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. The response of the applicant has been read and given careful consideration. Responses to the arguments of the applicant are presented after the first rejection to which they are directed.

New rejections are applied.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1,3-13 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,960,680 A (PAN et al.) in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD).

US 4,960,680 A (PAN et al.) teaches SnSbIn phase change optical recording media. The upper side of the recording layer (42) in figure 2 is shown to have a protective overcoat (41). The recording layer material may be coated by sputtering or evaporation (column 5/lines 43-54). Example 1 uses a 80 nm thick SnSbIn recording layer. (column 6). Example 3 uses 100 nm thick recording layer coatings (column 7). There is a sample in the table in column 9, which corresponds to $\text{Sb}_{70}\text{Sn}_{15}\text{In}_{15}$.

EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) teaches that silicon oxynitride (SiON) and silicon dioxide are known protective layer materials [0020]. These are disclosed as useful as crystallization acceleration layers as well [0030]. The thickness of the upper crystallization acceleration layers may be 10 to 80 nm. [0050].

JP 03-086943 A (ASAHI CHEM IND CO LTD) teaches the provision of silicon oxynitride protective layers over optical recording media (abstract). This is described as having

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good water/moisture barrier properties, good mechanical strength, good chemical stability and resistance to peeling or cracking (abstract). The use of phase change optical recording media, including Se and Te is described in the upper left column of page 2. Useful thicknesses appear in the examples and include 80 nm (page 6, lower left column), 35 nm (example 2, page 6/upper right column)

It would have been obvious to one skilled in the art to modify the invention of US 4,960,680 A (PAN et al.) by providing a protective layer coating as disclosed in figure 2 of that reference and to use known protective layer materials such as the SiON taught by EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD) with a reasonable expectation of gaining the protective effects described by JP 03-086943 A (ASAHI CHEM IND CO LTD) and the additional advantages of an acceleration in the speed of transformation from the amorphous to the crystalline state as disclosed by EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD).

The applicant argues that the applicant discovered that the use of silicon oxynitride with the recited phase change layers enhances the contrast of the resulting recording medium. The examiner directs the applicant to the instant specification, specifically figures 6a-c, which show the dependence of the argued limitation on the optical thickness of the SiON layer (the optical thickness is the product of the physical thickness and the refractive index of the dielectric layer, see the prepub of the instant specification at [0030]). The value of 1.6×80 nm shown in figure 6b yields a value of 128 nm which is less than $\frac{1}{4}$ of the wavelength range commonly assumed to result in antireflection properties (4×128 nm is 512 nm) and the wavelength range is 630-670 nm [0042]. The difference is due to the fact the presence of the metal/alloy layer as discussed in

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Phillips et al. '360 (3/63-4/52). The examiner notes that the position argued is not commensurate in scope with the claimed invention. The position of the examiner relating to interferometric considerations is also present in the prepub of the instant application at [0030 and 0038]. The rejection stands.

4. Claim 1,3-13 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,960,680 A (PAN et al.) in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD), further in view of Phillips et al. '360 and Uno et al. '690.

Phillips et al. '360 teaches optical recording media which use dielectric layers having antireflective thicknesses to more actively couple the light into the recording layer and optimize the reflectivity of the recording medium. The optical thicknesses are less than the quarter wavelength thicknesses generally assumed due to the presence of the adjacent metallic recording layer (3/62-5/4). The use of optical recording layers comprising at least 5% of two of Cd, **In**, **Sn**, **Sb**, **Pb**, **Bi**, **Mg**, **Cu**, **Al**, **Zn** and **Ag** is taught.

Uno et al. '690 teaches the equivalence of the use of SiON and other dielectrics in protective layers and the use of these materials to adjust the optical characteristics of the recording medium. (5/59-67).

In addition to the basis provided above concerning the propriety of the combination of US 4,960,680 A (PAN et al.), EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD), the examiner cites Phillips et al. '360 and Uno et al. '690 to establish for the record that the use of interferometrically important thicknesses of the dielectric layer are known in the art to increase the amount of light coupled

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into the recording layer and to adjust optical properties, such as reflectivity based upon the teachings of Phillips et al. '360 and that SiON in coatings adjusting the optical properties of optical recording media is known as evidenced by Uno et al. '690.

5. Claim 1,3-6,8-13,15-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **either of** US 4,774,170 A (PAN et al.), US 4,812,386 A (PAN et al.) or US 4,798,785 A (PAN et al.), in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD).

US 4,774,170 A (PAN et al.) teaches SnSbZn phase change optical recording media. The upper side of the recording layer (42) in figure 2 is shown to have a protective overcoat (41). The recording layer material may be coated by sputtering or evaporation (column 4/lines 39-50). Example 1 uses a 80 nm thick SnSbZn recording layer. (column 4). Example 3 uses 100 nm thick recording layer coatings (column 5).

US 4,812,386 A (PAN et al.) teaches SnSbGe phase change optical recording media. The upper side of the recording layer (42) in figure 2 is shown to have a protective overcoat (41). The recording layer material may be coated by sputtering or evaporation (column 5/lines 15-26). Example 1 uses a 80 nm thick SnSbGe recording layer. (column 5). Example 3 uses 100 nm thick recording layer coatings (column 6).

US 4,798,785 A (PAN et al.) teaches SnSbAl phase change optical recording media. The upper side of the recording layer (42) in figure 2 is shown to have a protective overcoat (41). The recording layer material may be coated by sputtering or evaporation (column 4/lines 55-66). Example 1 uses a 80 nm thick SnSbZn recording layer. (column 5). Example 3 uses 100 nm thick recording layer coatings (column 6).

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It would have been obvious to one skilled in the art to modify the invention of **either of** US 4,774,170 A (PAN et al.), US 4,812,386 A (PAN et al.) or US 4,798,785 A (PAN et al.) by providing a protective layer coating as disclosed in figure 2 of that reference and to use known protective layer materials such as the SiON taught by of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD) with a reasonable expectation of gaining the protective effects described by JP 03-086943 A (ASAHI CHEM IND CO LTD) and the additional advantages of an acceleration in the speed of transformation from the amorphous to the crystalline state as disclosed by EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD).

The rejection stands for the reasoning above as no further arguments were directed at this rejection.

6. Claim 1,3-6,8-13,15-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **either of** US 4,774,170 A (PAN et al.), US 4,812,386 A (PAN et al.) or US 4,798,785 A (PAN et al.), in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD) further in view of Phillips et al. '360 and Uno et al. '690.

In addition to the basis provided above concerning the propriety of the combination of **either of** US 4,774,170 A (PAN et al.), US 4,812,386 A (PAN et al.) or US 4,798,785 A (PAN et al.) with EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD), the examiner cites Phillips et al. '360 and Uno et al. '690 to establish for the record that the use of interferometrically important thicknesses of the dielectric layer are known in the art to increase the amount of light coupled into the recording

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layer and to adjust optical properties, such as reflectivity based upon the teachings of Phillips et al. '360 and that SiON in coatings adjusting the optical properties of optical recording media is known as evidenced by Uno et al. '690

7. Claims 1-6,8-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **either of** US 4,774,170 A (PAN et al.), US 4,812,386 A (PAN et al.) or US 4,798,785 A (PAN et al.), in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD), and further in view of US 5,972,459 A (KAWAKUBO et al.).

US 5,972,459 A (KAWAKUBO et al.) teaches a variety of different structures for optical recording media in figures 16-23. Figure 23 shows an embodiment where a central substrate is used and two recording layers are provided, one on each side, effectively doubling the recording capacity. (column 13/line 59-column 14/line 19). The use of phase change recording layers is specifically taught in column 12 at lines 13-20.

In addition to the basis provided above, it would have been obvious to one skilled in the art to modify the invention of over either of US 4,774,170 A (PAN et al.), US 4,812,386 A (PAN et al.) or US 4,798,785 A (PAN et al.), in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD) by providing each side of the substrate t with a recording layer to double the capacity of the medium based upon the teachings of US 5,972,459 A (KAWAKUBO et al.).

The rejection stands for the reasoning above as no further arguments were directed at this rejection.

8. Claims 1-6,8-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable

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over **either** of US 4,774,170 A (PAN et al.), US 4,812,386 A (PAN et al.) or US 4,798,785 A (PAN et al.), in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD), and further in view of US 5,972,459 A (KAWAKUBO et al.), Phillips et al. '360 and Uno et al. '690

In addition to the basis provided above concerning the propriety of the combination of **either** of US 4,774,170 A (PAN et al.), US 4,812,386 A (PAN et al.) or US 4,798,785 A (PAN et al.), with EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD), JP 03-086943 A (ASAHI CHEM IND CO LTD) and US 5,972,459 A (KAWAKUBO et al.), the examiner cites Phillips et al. '360 and Uno et al. '690 to establish for the record that the use of interferometrically important thicknesses of the dielectric layer are known in the art to increase the amount of light coupled into the recording layer and to adjust optical properties, such as reflectivity based upon the teachings of Phillips et al. '360 and that SiON in coatings adjusting the optical properties of optical recording media is known as evidenced by Uno et al. '690

9. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,960,680 A (PAN et al.) in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD), and further in view of US 5,972,459 A (KAWAKUBO et al.).

In addition to the basis provided above, it would have been obvious to one skilled in the art to modify the invention of over US 4,960,680 A (PAN et al.), in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD) by providing each side of the substrate with a recording layer to double the capacity of the medium based upon the teachings of US 5,972,459 A (KAWAKUBO et al.).

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The rejection stands for the reasoning above as no further arguments were directed at this rejection.

10. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,960,680 A (PAN et al.) in view of EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) and JP 03-086943 A (ASAHI CHEM IND CO LTD), and further in view of US 5,972,459 A (KAWAKUBO et al.), Phillips et al. '360 and Uno et al. '690

In addition to the basis provided above concerning the propriety of the combination of US 4,960,680 A (PAN et al.) with EP 0945860 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD), JP 03-086943 A (ASAHI CHEM IND CO LTD) and US 5,972,459 A (KAWAKUBO et al.), the examiner cites Phillips et al. '360 and Uno et al. '690 to establish for the record that the use of interferometrically important thicknesses of the dielectric layer are known in the art to increase the amount of light coupled into the recording layer and to adjust optical properties, such as reflectivity based upon the teachings of Phillips et al. '360 and that SiON in coatings adjusting the optical properties of optical recording media is known as evidenced by Uno et al. '690

11 The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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12 Claims 1-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 6,908,725. Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of coverage in the patent and the instant application overlap, including the recitation of the use of silicon oxynitride (claim 18), the metal alloy layer composition (claim 1) and the process claims of 13-20 are nominal methods of coating without specifics.

13 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Becker et al. '483 and Wilkinson '261 teach early usage of quarter wavelength thicknesses to more effectively couple the light into the recording layer.

14 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebrannndt whose telephone number is 703-308-4397. The examiner can normally be reached on Available Mondays-Thursday and alternative Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

6/22/08


MARTIN ANGEBRANNNDT
PRIMARY EXAMINER
GROUP 1100 1-70